



Delaware River Basin Commission

DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

**CONVENING PAPER
FOR THE
DEVELOPMENT OF A NEW
COMPREHENSIVE PLAN FOR THE DELAWARE RIVER BASIN**

May 2001

**A Report to the Delaware River Basin Commission
and the
DRBC Watershed Advisory Council**

**Prepared by
Michael L. Personett
M.L. Personett & Associates**

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION.....	4
2.0 SCOPE OF THE INTERVIEW PROCESS.....	5
3.0 STAKEHOLDER GROUPS.....	7
4.0 ISSUES OF INTEREST TO STAKEHOLDERS.....	9
4.1 Issue: Focus and Content of a New Comprehensive Plan for the Delaware River Basin.....	9
4.2 Issue: Water Quantity Needs and Strategies.....	13
4.2.1 Water Quantity Needs.....	13
4.2.2 Strategies for Meeting Water Quantity Needs.....	20
4.3 Issue: Water Quality Needs and Strategies.....	21
4.3.1 Water Quality Problems and Needs.....	23
4.3.2 Water Quality Management Strategies.....	25
4.4 Issue: Flood Loss Reduction Needs and Strategies.....	28
4.4.1 Flooding Problems and Flood Protection Needs.....	28
4.4.2 Flood Loss Reduction Strategies.....	29
4.5 Issue: Waterway Corridor Management.....	31
4.6 Issue: Public Awareness of Water Resources Problems and Needs.....	33
4.7 Issue: Institutional Arrangements for Water Resources Management..	33
4.7.1 Intergovernmental Roles and Responsibilities.....	33
4.7.2 Management of Land Use and Development.....	36
4.7.3 Funding for Implementation of Management Strategies.....	37
4.7.4 Data and Information Management.....	39
5.0 SUMMARY OF FINDINGS.....	41
Appendix A INDIVIDUALS INTERVIEWED FOR INPUT ON THE DEVELOPMENT OF A NEW COMPREHENSIVE PLAN FOR THE DELAWARE RIVER BASIN	43
Appendix B INTERVIEW PROTOCOL	46

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CONVENING PAPER

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NOTE TO REVIEWERS

This draft *Convening Paper for the Development of a New Comprehensive Plan for the Delaware River Basin* is being provided to the Delaware River Basin Commission (DRBC) and its staff, the DRBC Watershed Advisory Council, and existing DRBC advisory committees for review and comment. The draft convening paper presents a synthesis of comments and opinions gathered through one-on-one interviews with key stakeholders. The purpose of the paper is to identify key issues of concern regarding the management of water resources within the Delaware River Basin and to present the varying perspectives of the stakeholders on those issues. This information is intended to help guide the overall design of the planning process.

The draft convening paper will be a major focus of discussion at the Watershed Advisory Council workshop on May 14-15, 2001. Participants in the workshop are requested to carefully review the paper with an eye toward answering two questions:

- Does the draft convening paper identify all of the relevant issues?
- Are the issues identified in the paper, and the perspectives of various stakeholders, adequately described or characterized?

The draft convening paper will be modified following the workshop to reflect feedback provided by the participants in the workshop and from other reviewers.

Written comments on the draft convening paper will also be considered. Written comments should be sent to:

Lance Miller
Delaware River Basin Commission
P.O. Box 7360
West Trenton, N.J. 08628-0360
(609) 883-9500 extension 256
e-mail: lmiller@drbc.state.nj.us

1.0 INTRODUCTION

In September 1999, the Governors of the Delaware River Basin states (Delaware, New Jersey, New York, and Pennsylvania) adopted a resolution that directs the Commission to prepare a new Comprehensive Plan for the Delaware River Basin. The resolution states:

“We the Governors direct the Delaware River Basin Commission to develop a new comprehensive water resources plan for the Basin, periodically compile an environmental goals and indicators report, and establish a watershed advisory council.”

During the fall of 2000, the Commission initiated a process to reorganize its existing Comprehensive Plan and prepare a new Comprehensive Plan. The existing Comprehensive Plan has recently been organized into a more coherent whole. A new Comprehensive Plan is to be developed over a three-year period for adoption by the Commission in 2003.

The Commission is committed to the development of a new Comprehensive Plan through a collaborative process that will include the participation of various stakeholders with interests in water resources management in the Delaware River Basin. The primary vehicle for stakeholder participation is through the Watershed Advisory Council. By resolution of the DRBC Commissioners,¹ the Watershed Advisory Council is to consist of “...technical, economic development, academic, and environmental interests, selected from numerous sectors” and its members are to be appointed by the Commission’s Executive Director based on the recommendations of the DRBC Commissioners. The role of the Watershed Advisory Council, as defined by Commission resolution, is to:

- Advise the Commissioners on the development of the basin-wide comprehensive water resources plan;
- Advise on goal-setting and establishment of indicators to monitor progress;
- Recommend goals for watershed education; and

¹ DRBC Commission Resolution No. 99-23, adopted October 27, 1999.

DRAFT

- Recommend a program to create a basin identity to increase interest in the basin as a tourist destination and to enhance environmentally sound economic development.

The members of the Watershed Advisory Council were appointed in December 2000. The Council held its first meeting on January 17, 2001.

As a first step in the development of a new Comprehensive Plan, Watershed Advisory Council members, DRBC Commission alternates, and DRBC staff were interviewed to identify issues to be addressed during the planning process. The opinions, comments, and suggestions obtained through the interviews are presented in this “convening paper.” The purpose of this paper is to identify key issues that might be addressed in the development of a new Comprehensive Plan and to identify the perspectives of various stakeholders on those issues. Areas where there is apparent agreement, as well as areas of differing opinion, are highlighted in the paper. This information is intended to help identify and prioritize issues and stimulate further discussion by the Commission and by the Watershed Advisory Council with regard to the content of a new Comprehensive Plan.

This convening paper is organized into four major sections. Section 2.0 describes the interview process and Section 3.0 identifies the stakeholder groups represented by the individuals interviewed. Section 4.0 presents issues raised by the interviewees that might be addressed in a new Comprehensive Plan and the views of the various stakeholder groups on the issues, including areas of agreement and disagreement. Section 5.0 presents a summary of findings with respect to key areas of agreement and disagreement among stakeholders.

2.0 SCOPE OF THE INTERVIEW PROCESS

Ten (10) DRBC Commission representatives and 13 DRBC staff were interviewed early in the process from October to December 2000. These individuals are identified in Appendix A. The interviews with DRBC Commission alternates and staff were informal. No standard interview protocol was followed. The interviews generally focused on two key questions: 1) what should a new Comprehensive Plan for the Delaware River Basin be? and 2) what issues should be addressed in a new Comprehensive Plan? Discussions with DRBC Commission alternates also typically included questions about the design of the planning process and questions about outside resources that might be available to support the planning process (e.g., state agency staff resources). The meetings with DRBC staff focused particularly on the goals, objectives, and

DRAFT

work priorities of the various DRBC advisory committees. This information was sought both as input on issues of significance and to gain insight with regard to the potential role of the advisory committees in the Comprehensive Plan development process.

A second round of interviews were conducted with each member of the Watershed Advisory Council. Thirty (30) Watershed Advisory Council members were interviewed in January-March, 2001. Often, those being interviewed invited other individuals affiliated with their organization to participate in the interview. Twenty-two (22) other individuals participated in interviews. Watershed Advisory Council members and other interview participants are listed in Appendix A. Most of the interviews were conducted in person at the interviewees' work locations. Generally, the interviews lasted from 60 to 90 minutes. In one case, an interview was conducted by telephone.

An "interview protocol" was developed (see Appendix B) to elicit comments from Watershed Advisory Council members in five topical areas:

- The professional background of the interviewee and information about the interviewee's organizational affiliation (e.g., the type of business or agency, the nature of the individual's activities with their employer, etc.).
- The scope of a new Comprehensive Plan for the Delaware River Basin.
- Issues to be addressed in a new Comprehensive Plan.
- Identification of key stakeholders that should be involved in the planning process.
- Issues relating to the overall design of the planning process (e.g., obstacles to consensus, role of the Watershed Advisory Council, ground rules for decision-making).

The interview protocol was not employed rigorously as a questionnaire or survey instrument whereby the interviewer would ask each question in sequence and record responses. Rather, the interview protocol provided a general guide and overall structure for the informal interviews. The interviewer allowed the conversation to develop according to the interests of the individual being interviewed.

A significant number of the members of the Watershed Advisory Council had only limited familiarity with the DRBC, its purpose as defined by the Delaware River Basin Compact, or the requirements of the Compact with regard to the Comprehensive Plan. Accordingly, many of those interviewed had questions about the DRBC, about the Comprehensive Plan development process, and about their role as members of the Watershed Advisory Council. In many cases it was necessary for the interviewer to provide background information during the interviews. While such “coaching” raises the possibility of interviewer bias, in practice it was found that many of those interviewed required such information in order to provide a meaningful response to questions.

3.0 STAKEHOLDER GROUPS

The 76 individuals that participated in interviews (see Appendix A) represent a diversity of interests and perspectives on water resources management in the Delaware River Basin and provide a relatively good cross-section of water-related “interests” and “stakeholders” in the Delaware River Basin. However, not all of the stakeholders that have interests in a particular issue were included in the interviews. Most of the individuals interviewed have interests that are focused in one or perhaps two issue areas, generally reflecting each individual’s professional background or their current job responsibilities. For example, an individual representing industrial water users would typically display a focus on water supply and water quality issues, as those are issues that have direct bearing on the business activities of that individual’s employer. Similarly, an individual representing a regulatory agency involved in water quality standards setting or permitting, might have only limited knowledge of and interest in water supply issues or flood protection. For many of those interviewed, there is also a geographical dimension to their interests and perspectives. For example, an individual residing in the upper portions of the basin and involved primarily in upper basin water issues may have little or no knowledge of or interest in lower basin issues. These observations suggest that information sharing among the participants in the planning process will be important.

To preserve confidentiality, the information provided from the interviews is organized into four broad stakeholder groups: governmental agencies, the regulated community, recreation and tourism interests, and environmental organizations. However, many of those interviewed, and the organizations they represent, do not fit neatly into a single stakeholder category. In addition,

there is considerable diversity of interests and perspectives within each broad stakeholder group. Where appropriate, this paper identifies those differentiations.

A brief description of each stakeholder group follows.

Governmental Agencies

The governmental agency stakeholder group includes interstate, federal, state, and local governmental agencies. This stakeholder group represents a broad range of governmental functions related to water resources management, such as monitoring and data collection, planning, regulation of water supply and water quality, flood protection, navigation, and water resources project development.

Interstate agencies are those with responsibilities and jurisdictional areas that span two or more state boundaries and are independent of other levels of government. Interstate agencies with water resources management functions that operate within the Delaware River Basin and with representatives included in the interview process are:

- Delaware River Basin Commission
- Delaware Valley Regional Planning Commission
- Delaware River Port Authority

There are numerous federal agencies that are engaged in one or more aspects of water resources management within the Delaware River Basin. Those interviewed for this paper include representatives from:

- U.S. Army Corps of Engineers (two districts)
- U.S. Environmental Protection Agency (Regions II and III)
- U.S. Geological Survey, Department of Interior (DOI)
- National Park Service (DOI)

Individuals representing the water supply, water quality, and fish and wildlife management functions of the four basin state governments were also interviewed. However, it should be noted that state agency perspectives and interests for each of these functions were not represented for each of the four basin states. Most of the individuals interviewed representing state agencies are directly affiliated with the Delaware River Basin Commission.

Several individuals representing municipal and county government were interviewed including a county water resources agency and a county conservation district. However, for this paper, only the land use planning and water-related regulatory functions of local government are considered as part of the governmental agency stakeholder group.

The Regulated Community

The “regulated community” is a broad category of stakeholders and interests that are engaged in activities that impact water resources. The regulated community stakeholder group falls into two general categories: water suppliers/users and wastewater generators/dischargers. For the development of this paper, individuals representing public and investor-owned water and wastewater utilities, industrial water users and wastewater dischargers, electric power generation utilities, agriculture, and land development interests were interviewed.

Recreation and Tourism Interests

This stakeholder group has a particular focus on sport fishing and recreational boating, as well as the promotion of recreation and tourism in the basin. Several individuals interviewed have a specific focus on these issues. Generally, this stakeholder group is representative of the views of many of those interviewed that have general interests in such issues as recreational access to the river and bay, protection of recreational values that are dependent upon both water supply and water quality, and public awareness of recreational opportunities and values.

Environmental Organizations

A fourth stakeholder group consists of environmental organizations. For the most part, these are non-governmental organizations with a focus on environmental protection and restoration. Collectively, these organizations are engaged in a variety of activities related to water resources management, including monitoring and data collection, water quality planning, land use planning, habitat preservation and restoration, and environmental education. Some organizations in this stakeholder group function in an “advocacy” role in the public policy arena. A number of individuals representing environmental organizations were interviewed.

4.0 ISSUES OF INTEREST TO STAKEHOLDERS

As indicated, the primary purpose of the interview process, and this convening paper, is to identify key issues of concern to the various stakeholders with an “interest” in water resources management in the Delaware River Basin. Those issues, and the perspectives of the stakeholders on the issues, are presented below.

4.1 Issue: Focus and Content of a New Comprehensive Plan for the Delaware River Basin

All of the interviews began with questions and discussion about what a new Comprehensive Plan for the Delaware River Basin should be. Across the board, there was unanimous agreement that a new Comprehensive Plan is needed, that it should be “forward-looking”, and that it should provide the overall framework for management of water resources within the basin. Most of those interviewed also cited the need to evaluate current and future conditions to identify problems and needs and agreed that a new Comprehensive Plan should include goals, objectives, and strategies for addressing problems and needs. Those interviewed that are most familiar with the DRBC, often took note that the current Comprehensive Plan is nothing more than a compilation of DRBC resolutions, regulations, and project approvals and that it lacks the most common characteristic of a “plan,” that is, a focus on the future.

There is also widespread agreement that the process for development of a new Comprehensive Plan should be collaborative and consensus-based. Many of those interviewed cited the need for “buy-in” by key stakeholders. Others mentioned the importance of cooperation and the need to establish partnerships among the many entities involved in water resources management.

While there is strong agreement that a new Comprehensive Plan should provide an overall framework to guide water resources management decisions and future investments, there was a divergence of opinion about the focus and content of a new plan. Many of those interviewed felt that the Comprehensive Plan should be truly comprehensive in scope. These individuals generally believe that the plan should address all present and future water-related problems and needs within the basin, and more specifically, the issue areas enumerated in the Delaware River Basin Compact (i.e., surface and ground water supply, flow management, water quality, flood protection, protection of fish and wildlife resources, recreation, and hydroelectric power

generation, etc.). A common sentiment is that the Comprehensive Plan should take a “holistic” view of the basin and that the many interrelationships among problems, needs, and management strategies should be fully recognized.

Most of those expressing an “expansive” view of the Comprehensive Plan and the planning process also felt that the plan should not focus solely on issues that are within the DRBC’s traditional “sphere-of-influence.” Rather, these interviewees believe a new Comprehensive Plan should address problems and recommend strategies without regard to jurisdictional questions. In other words, the Comprehensive Plan should not simply be a strategic plan for the DRBC. Instead, it should set forth a broad vision of a desired future and define specific goals, objectives, and strategies without regard to who is responsible for implementation.

Not all of those interviewed agreed with an “expansive” view of a Comprehensive Plan that is all-inclusive. Some interviewees, particularly state and federal agency representatives and the regulated community, felt that the Comprehensive Plan should be focused on the “core” issue areas that are within the DRBC’s traditional sphere-of-influence. For many of these individuals, the “core” issues are defined as water supply, flow management, and water quality. Some interviewees took note that the DRBC is the only agency with basin-wide responsibilities for water supply and flow management and, consequently, they felt that the planning process should be even more narrowly focused on those issues. A few expressed the opinion that the original mission and purpose of the DRBC was to develop water supply reservoirs and that the Comprehensive Plan should focus mostly on the identification of water supply needs and development of new water supply sources.

Some of those who advocate a more limited or focused Comprehensive Plan believe that it would be impractical to address issues over which the DRBC has little or no influence. Concerns were also expressed about the DRBC “straying” into intrastate and local issues. Some interviewees stated that they were concerned about “biting off more than we can chew” and felt that the planning process could fail by trying to address too many issues and by becoming unwieldy. One individual cautioned against the plan trying to “...be all things to all people.”

Many of those interviewed, including those that embraced an “expansive” view of the Comprehensive Plan, recognize that time and funding constraints might require that the scope of the planning process be narrowed. Several suggestions were offered. One suggestion is that the

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issues to be addressed in the development of a new Comprehensive Plan should be prioritized and resources (e.g., time, staff support, funding) allocated accordingly. Another suggestion is to develop a new Comprehensive Plan in phases. For example, an initial phase might focus on a handful of “core” issues, such as water supply, flow management, and water quality. “Secondary” issues would be taken up in a subsequent phase. One interviewee expressed the opinion that the planning process should be continuous and “iterative” and that the Comprehensive Plan should be updated on a regular interval. Such an approach could lend itself to addressing issues sequentially in phases. However, many of those that embrace an expansive view of the Comprehensive Plan expressed concerns about issues being addressed in a disjointed or in a piecemeal fashion. These individuals are concerned that important interrelationships among issues might be overlooked if all of the issues of importance in the basin aren’t addressed simultaneously.

Questions were also raised about whether and how non-DRBC planning processes would be tied into the development of a new Comprehensive Plan. It is observed that nearly every interstate, federal, state, and local agency with water resources management responsibilities is engaged in some type of on-going planning activities. There also are existing plans that have been developed through “special” intergovernmental processes; for example, the freshwater fisheries management plan for the basin that was developed by the Delaware River Basin Fish and Wildlife Management Cooperative. Interviewees raising these questions generally agreed that an effort should be made to identify and incorporate the relevant portions of any existing plans into the Comprehensive Plan. Some believe that the management strategies recommended in a new Comprehensive Plan should be consistent with and further the achievement of goals and objectives of other plans. There is also general agreement that the development of a new Comprehensive Plan should be coordinated with other on-going water-related planning activities. For example, the State of New Jersey has recently initiated a watershed management program.

KEY QUESTIONS: FOCUS AND CONTENT OF A NEW COMPREHENSIVE PLAN

- Should a new Comprehensive Plan for the Delaware River Basin be all-inclusive, that is, should it address all issues of concern relating to water resources management?
- Or, should a new Comprehensive Plan focus more narrowly on a few core issue areas, such as water supply, flow management, and water quality?

4.2 Issue: Water Quantity Needs and Strategies

There was widespread agreement among all of the individuals interviewed that water quantity-related issues are of central importance and must be addressed in the development of a new Comprehensive Plan. As noted, some of those interviewed believe that water quantity issues should be the primary focus of a new Comprehensive Plan.

Two broad categories of issues relating to water quantity or water supply were identified from the interviews: issues relating to current and future water needs and issues relating to the potential strategies which might be adopted to address water quantity problems and needs.

4.2.1 Water Quantity Needs

Many of those interviewed expressed interest or had concerns about water quantity “needs.” This included concerns about water supply availability, current and future water demands for various off-channel or “socioeconomic” water uses (e.g., municipal, industrial, agricultural) and issues relating to various instream water uses and needs, for example, stream flow needs for water quality maintenance, protection of aquatic ecosystems, recreation, and for hydroelectric power generation.

Water Supply Availability

Several interviewees identified water supply availability as an issue of concern. The general question is “...how much water is available from surface and ground water sources within the Delaware River Basin?” Most of those expressing interest in this issue were particularly concerned about the reliability and sustainability of ground water as a source of water supply. Geographic areas mentioned that are of particular concern include southeastern Pennsylvania, the

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Highlands area of northwestern New Jersey, areas of southern New Jersey that utilize the PRM Aquifer, and areas of Delaware.

Some of those interviewed expressed particular concern about ground water recharge. One concern relates to the protection of recharge areas from land development that could increase impervious cover, increase storm water runoff, and reduce ground water recharge. Another concern is that wastewater discharges that are derived from ground water use are being discharged to surface streams rather than being used to replenish ground water supplies.

Concerns were also commonly voiced about the interrelationship of ground and surface water supplies. Specifically, in large areas of the basin, ground water contributes a significant portion of “base” stream flow, particularly during drought. There is concern that over-development of ground water supplies will diminish stream flow and impair both withdrawals and instream water uses. It was noted by several of those interviewed that this concern about ground water-surface water interaction provides the basis for DRBC regulations for the “ground water protected area” in southeastern Pennsylvania.

Several interviewees cited concerns about surface water availability. For example, one individual expressed a concern that the Schuylkill River in Pennsylvania could already be over-allocated if all authorized and grandfathered water diversions were fully utilized. A concern was also voiced regarding inter-watershed transfers of water either through transfers of supply from one watershed to another or through transfers of wastewater return flows. It was noted that transfers could severely deplete stream flows in one watershed or tributary while increasing flows in another. Several of those interviewed felt that closer attention should be paid to the spatial redistribution of water through either planned or unplanned inter-watershed transfers.

Stakeholders with interests in fisheries management and water-based recreation in the upper basin also expressed interest in whether available surface water supplies in existing reservoirs might be “extended” through changes in reservoir operations policies. It was suggested that additional releases could be made on a seasonal basis under certain hydrologic conditions without reducing the yield of the reservoirs for water supply purposes.

KEY QUESTIONS: GROUND AND SURFACE WATER AVAILABILITY

- How much ground water is currently available? Can additional ground water supplies be developed without adversely affecting stream flows or water quality?
- What are the hydrologic relationships between ground and surface water?
- How much water is currently available under drought-of-record hydrologic conditions for development and use within or outside of the basin?
- Can additional surface water supplies be made available from existing reservoirs during non-drought periods without increasing the risk of shortage during drought?
- What are the hydrologic impacts of inter-watershed water transfers, either through supply transfers or relocation of wastewater return flows, in terms of alteration of stream flow patterns?

Water Supply Needs

Most of the interviewees, particularly those representing the governmental agency and regulated community stakeholder groups, see water supply for various “socioeconomic” or withdrawal uses (e.g., municipal, industrial, power generation, and agricultural) as a major issue. Many stated a view that the planning process should include a thorough evaluation of water supply and demand, both for current and future conditions. This would include an assessment of recent demographic and water use trends and development of water demand projections for a defined planning period (e.g., 20-30 years into the future). Several interviewees indicated that alternative water demand scenarios should be developed to account for the uncertainty that exists in any forecast or projection of future conditions. Water demand projections should also differentiate between “consumptive” water demands and “non-consumptive” water demands. At the basin level, the objective of the “supply/demand assessment” would be to determine whether existing water supplies are adequate to meet projected future needs. Many of those interviewed see this as a crucial first step in the planning process.

Several individuals questioned whether adequate data exist to develop a reasonably accurate “water balance” for the basin. It was noted that there are inconsistencies in the water use reporting requirements of the four basin states and that there are likely to be significant gaps in historical water use records. Some also had questions with regard to the geographic level of the water supply/demand assessment, noting that a basin-wide water balance will likely mask or camouflage potential water supply problems that are more local or regional in nature. Accordingly, some of those interviewed felt that the analysis should be performed at a geographic

level that would permit identification of water supply problems at a watershed or sub-watershed level or perhaps even at the level of individual local water suppliers.

Particular concerns were voiced by some of those interviewed about the location of new electric power generation facilities. With electric utility deregulation, and the advent of new power generation technology (e.g., gas turbines), a relatively large number of new power plants are being proposed in areas that may not have adequate water supply. It was observed that the primary consideration in locating new generation facilities appears to be access to electric transmission facilities rather than water supply availability. In particular, it was noted that many new facilities are proposing to locate away from the main stem of the Delaware River and would rely on smaller tributaries for water supply, some of which may not have adequate flows during drought. This could require the power generation companies to develop additional surface water storage or to back-up surface water supplies with other sources (e.g., ground water, reclaimed water). It may also be necessary to develop additional storage to compensate for increased consumptive water use. It was noted that while the consumptive demands of new power plants, individually, are relatively small, in the aggregate, the consumptive water demands of new power plants is a significant concern.

KEY QUESTIONS: WATER SUPPLY NEEDS

- How much water is currently being used in the basin for municipal, industrial, electric power generation, and agriculture? How much of the current use is consumptive? How much is non-consumptive?
- What portion of current water demand is being met with surface water supplies? With ground water supplies?
- How much water is projected to be needed in the future for municipal, industrial, electric power generation, and agriculture? How much of the projected use will be consumptive? How much will be non-consumptive?
- What are the stream flow implications of proposed new electric power generation facilities?
- What should be the planning period for water demand projections and for the water supply/demand assessment (e.g., 20 years, 30 years, 50 years)?
- How should uncertainty be addressed in water demand projections and in the supply/demand analysis?
- What should be the geographic resolution of the water supply/demand analysis (e.g., basin, sub-basin, county, water utility)?
- Under current and projected future conditions, are water resources sufficient to satisfy water supply needs for socioeconomic purposes (e.g., municipal, industrial, power generation)? If not, when and where could water supply problems occur?
- With current reservoir storage capacity, reservoir operations policies, and stream flow requirements, will surface water supplies be adequate to meet future withdrawal and instream water uses?

Stream Flow Needs of Aquatic Ecosystems

Individuals representing governmental agencies, recreation and tourism, and environmental stakeholder groups identified the water needs of flow-dependent aquatic ecosystems as an important issue in water resources management. Particular concerns were voiced by state regulators, reservoir owners, and sport fishing interests in the upper portions of the Delaware River Basin. Specifically, there are concerns about the amount, timing, and quality of reservoir releases on the overall health of freshwater fisheries habitat, particularly for the cold-water trout fishery that has developed downstream of existing reservoirs. Trout fishermen are particularly interested in reservoir release patterns to maintain acceptable water temperatures during the summer months and to provide adequate stream flows during the winter to protect the quality of the habitat that supports the trout fishery.

An individual representing the views of the owner/operator of several existing reservoirs in the upper portions of the basin, also expressed concerns about the biological health of the trout fishery and signaled a willingness to explore modifications to reservoir operations policies to satisfy the biological needs of the fisheries habitat. However, that individual stressed that any such decisions should be based on “sound science” relating to the biological needs of the habitat rather than the needs of recreational water users. This individual also cited concerns about the cost of modifying reservoir operations in terms of decreased water supply availability or reliability. It was noted that there are important “equity” issues associated with modifications to reservoir release policies in terms of who bears the costs of decreased water supply availability.

Others of those interviewed also expressed concerns about the instream flow needs of aquatic ecosystems in other portions of the Delaware River and in tributaries. A general concern is that there is insufficient data and scientific understanding of instream flow needs both for the main stem of the Delaware River and for major tributaries. A more specific concern is that changes in stream flow patterns, particularly decreases in base flows during drought, have caused degradation and significant losses of aquatic habitat. One interviewee expressed the opinion that decreased stream flow is more to blame for loss of aquatic habitat than are water quality problems.

Several of the individuals interviewed voiced concerns about the adequacy of stream flows during drought conditions in terms of the biological health of the Delaware Bay and Estuary.

Specifically at issue is whether low flows and the resultant elevation of salinity levels are adversely impacting the habitat of commercially important shellfish species, specifically oysters. Some cited evidence that higher salinity levels induce disease problems in oysters and the problem could undermine efforts to re-establish oyster beds. However, it was acknowledged by several of those expressing interest in this subject that the current scientific understanding of the relationship between freshwater inflows and the biological productivity of estuarine habitats is poor.

KEY QUESTIONS: STREAM FLOW NEEDS OF AQUATIC ECOSYSTEMS

- Are stream flows sufficient for maintenance of riverine and estuarine resources? If not, what flows are required and what are the potential impacts of providing those flows?
- What “needs” should instream flow requirements be based on (e.g., sport fisheries, commercial fisheries, biological needs of specific species)?

Stream Flow Needs for Recreation

Recreational boating interests in the upper portions of the Delaware River Basin expressed concerns about the adequacy of stream flows during the late-spring and summer boating season. These interests are also concerned about management of high flows from a boating safety perspective. Generally, these interests prefer that stream flows be managed within a range that is conducive to a quality recreational boating experience for users of various ages and skill levels.

KEY QUESTION: STREAM FLOW NEEDS FOR RECREATION

- Are stream flows sufficient for maintenance of recreational activities (e.g. canoeing, sport fishing)? If not, what flows are required at what time periods and what are the potential impacts of providing those flows?

Stream Flow Needs for Water Quality Maintenance

Several of those interviewed voiced concerns about the relationship between water quantity (i.e., stream flows) and water quality. For example, it was noted that waste load allocations and water quality standards are based on specified minimum flow conditions. Reducing targets for minimum stream flows could therefore result in violations of water quality standards or lead to

changes in water quality standards that would result in higher treatment requirements, and costs, for wastewater dischargers. Water user interests and governmental agency representatives also expressed great concern about the potential affects of low flow conditions on salinity levels in the tidal portions of the Delaware River. A specific concern relates to the movement of the “salt front” up river during low flow periods and the need to protect public and industrial water supplies from increasing salinity levels. Several interviewees noted that this concern applies both to protection of surface water diversions from the river and to ground water supplies in southern New Jersey. However, with regard to the latter, it was noted that a recent study indicates that the threat to ground water supplies is not as great as was once thought. More detailed studies are currently being conducted on the threat to ground water supplies in southern New Jersey from salt water intrusion.

Several interviewees also voiced concerns about the potential effects of a proposed project to deepen the main navigation channel in the lower portions of the Delaware River. At issue is whether the salt front could move further upstream during low flow conditions as a result of the channel deepening, which might necessitate higher minimum stream flow targets to mitigate the impact. In addition, several individuals expressed concern about the potential affects of increasing sea level elevation on water quality in the lower portions of the river and on flow management policies. Again, higher minimum stream flow targets and additional upstream reservoir releases could someday be needed to offset the affects of rising sea levels.

KEY QUESTIONS: STREAM FLOW NEEDS FOR WATER QUALITY MAINTENANCE

- Are stream flows sufficient for maintenance and protection of water quality (e.g., salinity control in the lower portions of the basin, assimilative capacity)? If not, what flows are required and what are the impacts of providing those flows?
- What are the implications of projected increases in sea level on flow needs for water supply, water quality, and estuarine habitat? Will additional flow augmentation be needed to maintain acceptable salinity levels?

Stream Flow Needs for Hydroelectric Power Generation

Hydroelectric power generation is identified as a concern in the Delaware River Basin Compact. However, very few of those interviewed identified hydroelectric power generation as an issue to be addressed in a new Comprehensive Plan. Most agree that the operation of existing hydroelectric generating facilities is now largely incidental to other water supply management activities, such as a reservoir releases for flood control or flow management. Also, development

of new hydroelectric facilities in the basin does not appear likely. Two issues relating to hydroelectric power were mentioned, however. One issue is related to the re-licensing of hydroelectric facilities by the Federal Energy Regulatory Commission (FERC) and the possibility that the operations of those facilities could be modified, for example, to provide pass through of flows for environmental purposes. Another issue is the possibility that existing reservoirs that were developed primarily for hydroelectric power generation might someday be used primarily for water supply purposes. For example, it has been suggested that the Lake Wallenpaupack reservoir could be acquired and used to augment river flows to meet targets at Montague and Trenton, N.J. or to offset increasing consumptive water demands elsewhere in the basin.

4.2.2 Strategies for Meeting Water Quantity Needs

Many interviewees also raised issues and concerns with regard to management strategies that might be implemented to meet various water quantity needs. This included concerns about strategies for meeting future water supply needs and strategies for management of flows for various instream uses.

Water Supply and Stream Flow Management Strategies

Through the course of the interviews, many individuals expressed interest or concern about various water management strategies that might be employed to address water supply and/or flow management needs. Many of those interviewed seemed to recognize and support the notion that water resource management must simultaneously address and attempt to balance multiple and often conflicting objectives including equitable apportionment of available water supply between basin states, provision of adequate water supply for various socioeconomic uses, protection of water quality, and maintenance of environmental and recreational values. Most of those interviewed also seemed to recognize that a combination of water management strategies will be needed in order to satisfy competing water needs in a balanced, equitable, and environmentally sustainable manner. Water quantity strategies mentioned frequently by those interviewed include placing greater emphasis on improved water use efficiency (i.e., conservation) and demand management during drought (i.e., curtailment of non-essential water users); expanded beneficial reuse and recycling of “reclaimed” water; expanded use of ground water supplies; greater “conjunctive” use of surface and ground water; and development of additional surface water supplies through modification of existing reservoirs or the construction of new reservoirs.

To some extent, individuals from all stakeholder groups agreed that a full range of strategies should be evaluated as part of the Comprehensive Plan development process. However, those representing the environmental stakeholder group tended to be more interested in “demand-side” measures, such as conservation, reuse and recycling, while those in the regulated community stakeholder group tended to emphasize surface water supply development (i.e., new reservoirs) as a preferred strategy for meeting future water supply and flow management needs.

Many of those interviewed, particularly those familiar with the Delaware River Basin Compact and the DRBC, described flow management as a critical water resources management function and a high priority for the planning process. Flow management issues are multi-dimensional. They include issues relating to the availability of surface water supply for various withdrawal uses (e.g., municipal, industrial), ground water management as it relates to stream flows, flows required to maintain water quality, stream flow needs of aquatic ecosystems and flow-dependent recreational activities, and hydroelectric power generation.

As noted above, concerns were voiced by many of those interviewed regarding the adequacy of stream flows to meet the future withdrawals needs of various types of water users. In particular, many of those interviewed expressed concern about the implications of further ground water development in areas where stream flows are heavily influenced by ground water levels. Some also voiced concerns about the potential impacts of new electric power generation facilities on both tributary and main stem flows.

4.3 Issue: Water Quality Needs and Strategies

Water pollution control and water quality enhancement have been priority objectives of water resources management within the Delaware River Basin for many decades. At one time, large portions of the lower Delaware River were severely polluted due to large municipal and industrial discharges of mostly untreated wastewater. Great strides have been made since the 1960’s in the control of “point sources” of water pollution, particularly in the removal of organic contaminants in wastewater discharges that deplete dissolved oxygen levels in receiving waters. This progress has come through the concerted efforts of federal, interstate, and state regulatory action to establish water quality standards, which led to the construction of municipal and industrial wastewater treatment facilities and the control of other sources of water pollution

KEY QUESTIONS RE: WATER SUPPLY AND FLOW MANAGEMENT STRATEGIES

- Can existing flow management policies be modified to better optimize water supply, fish and wildlife, recreation, water quality, and hydroelectric needs?
- Can the effective yields of existing reservoirs be effectively increased by adopting operations policies that allow more water to be released under certain hydrologic conditions without significant increases in the risk of shortage during drought.
- Is there a need for additional reservoir storage in the basin, either through modification of existing reservoirs or development of new reservoirs, to meet water resource needs?
- To what extent should the operating policies for existing reservoirs be modified to meet water resource needs?
- Are existing ground water management policies and programs adequate to protect stream flows and quality? Are there areas where additional ground water development should be restricted or prohibited?
- To what extent should future inter-watershed water transfers be restricted?
- To what extent can or should local land use and development controls be used to direct growth towards areas with adequate water resources and water supply infrastructure?
- To what extent can additional water conservation measures be used to reduce future water supply needs and meet future water resource needs? What water conservation strategies would be most effective?
- To what extent can future water supply needs be met through reuse of reclaimed water (i.e., appropriately treated wastewater)? What are the hydrologic implications of increased water reuse (e.g., increased consumptive use, reduced return flows)?
- To what extent should increased water demands on smaller intrastate tributaries be mitigated by storage, withdrawal cutbacks, or flow passby requirements during dry periods ?
- To what extent can demand management strategies (e.g., restrictions on non-essential uses) be relied on to reduce water supply needs during drought? Will water conservation programs “harden” water demands and reduce the ability to reduce demand during drought?
- Are there areas where strategies for conjunctive use of ground and surface water should be encouraged?
- How might various water supply or flow management strategies affect water quality?

(e.g., combined sewer overflows). Today, portions of the Delaware River that were once severely polluted and all but devoid of aquatic life have largely recovered. In the upper portions of the basin, high water quality conditions exist and non-degradation policies are in place to protect water quality.

Despite the great progress that has been made in water pollution control over the past several decades, nearly all of those interviewed consider water quality issues to be of paramount

importance. There is strong agreement that water quality issues, broadly defined, are “core” issues that must be addressed in the development of a new Comprehensive Plan. As with water quantity issues, water quality issues raised during the interviews can be categorized according to “needs” and problems and according to potential “strategies” for addressing needs.

4.3.1 Water Quality Problems and Needs

Water quality issues have broad implications for water resources management in the Delaware River Basin. Water quality is directly linked to water supply issues in that suitable quality “source waters” are needed for various water uses. Water quality is also of critical importance to the health and productivity of aquatic ecosystems and has direct bearing on water-related recreational activities.

Quality of Water Supply Sources

Many of those interviewed representing governmental agencies and the regulated community stakeholder groups voiced concerns about the quality of surface and ground water supplies from the perspective of “source water protection.” It was noted that water supplies must be of suitable quality for various socioeconomic uses, in addition to being available in adequate quantities. For public water suppliers particularly, a primary goal and focus of a new Comprehensive Plan should be protection and enhancement of source water supplies. Degradation of source water supplies, whether surface water or ground water, is seen as posing potential risks to public health and increasing costs for potable water treatment.

Most of those expressing concerns about source water quality believe that non-point sources of pollution pose the greatest threats, particularly in terms of toxic contaminants in surface water runoff. The impacts of urbanization on both surface water and ground water quality is widely viewed as a major problem. Concerns were often voiced about storm water runoff that may be contaminated with hydrocarbons from roads and parking lots, with nutrients from septic systems and landscaped areas, and with commonly used chemicals (e.g., pesticides, herbicides). Some interviewees also have concerns about non-point sources of pollution from agricultural, forestry, and mining activities and from old industrial sites (e.g., “brownfields”). A few representatives of the regulated community also cited concerns about atmospheric sources of certain toxic contaminants, such as PCBs.

The relationship between stream flows and water quality also raises source water protection issues. As discussed previously, many of those interviewed view maintenance of acceptable salinity levels in the lower portions of the river as essential for the protection of public water supplies. One individual also cited the importance of adequate minimum stream flows for waste load assimilation. A downstream water supplier also expressed concerns about the practice of releasing relatively poor quality water from the Cannonsville Reservoir to satisfy downstream flow requirements. Specifically, it is believed that algae blooms in this reservoir during the winter months is causing taste and odor problems in drinking water supplies.

KEY QUESTIONS: QUALITY OF WATER SUPPLY SOURCES

- Are there water quality threats to potable water users in the basin? If so, where are the threats and what are the causes or sources of pollution? Are these threats to ground water quality, surface water quality, or both? What source water quality is needed for potable water supply?
- Are there water quality threats to non-potable water users in the basin (e.g., industrial cooling water)? If so, where are the threats and what are the sources? What water quality is needed for these users?
- Are there streams and aquifers that have not yet attained full compliance with applicable water quality standards? If so, where are the exceedances and what are the causes?

Water Quality Needs of Aquatic Ecosystems

There is agreement among many of those interviewed that water quality, as it relates to the biological health of aquatic ecosystems, is an important issue that should be addressed in the planning process. Many of those interviewed recalled the once severe pollution of the lower portions of the Delaware River and the near catastrophic impact of low dissolved oxygen levels on shad and other fish populations. While water quality in the lower basin has improved dramatically and many species of fish have recovered, many of those interviewed remain concerned about threats to water quality in the lower basin. Interviewees representing the governmental agency and environmental stakeholder groups commonly voiced concerns about toxic contaminants and the impacts of such contaminants on aquatic organisms up and down the food chain. Several interviewees noted that fish and shellfish consumption advisories are currently in effect because of contamination with toxic substances. Both point and non-point sources of toxic contaminants were identified as concerns. One individual also expressed

concerns about maintenance dredging of sediment from the navigation channel and the potential for “re-suspension” of toxic contaminants in the water column.

In the upper portions of the basin, a major concern of state agency and recreational fishing interests is the quality of water in those reaches of the river that support trout fisheries. The principal water quality concern is maintenance of water temperatures during the summer months. Sport fishing interests would prefer that water temperatures be maintained at or below 70 degrees Fahrenheit. Concern was also voiced about high sediment loadings during flooding events and the impacts of sedimentation and high turbidity on fish habitat.

KEY QUESTIONS: WATER QUALITY NEEDS OF AQUATIC ECOSYSTEMS

- Are there water quality threats to aquatic ecosystems, and the fish and wildlife resources they support? If so, where are the threats and what are the causes or sources?
- What level of water quality is needed to maintain healthy riverine and estuarine resources?
- Are there streams that have not yet attained compliance with applicable aquatic standards? If so, where are the exceedances and what are the causes?

Water Quality Needs for Recreation

Several of those interviewed cited the importance of maintaining surface water quality for water-based recreation. A common view is that achieving and maintaining the goal of “fishable and swimmable” streams should still be a top priority. Several comments were also made about the needs to encourage greater recreational use of the river as a strategy to build and maintain a “constituency” for clean water. A few interviewees noted that people will be reluctant to use the river as a recreational resource if it is polluted or perceived to be polluted. Conversely, keeping the public “on the river” is seen by some as a way to ensure that water quality remains a priority of water resources management.

Particular concerns were expressed about water quality by sport fishing and recreational boating interests in the upper portions of the Delaware River Basin. These interests see protection of the near-pristine water quality in the upper portions of the Delaware River as vital to their businesses. Concerns were voiced about population growth and land development in the area and the potential for water quality degradation even in areas protected under current “anti-degradation” policies. One individual cited concerns about new development served by centralized wastewater

collection and treatment facilities, both because of the potential for new direct discharges to the river or tributaries and because of the generally higher land development densities that accompany centralized wastewater systems. Sport fishing and boating interests also expressed concerns about deteriorating water quality in existing reservoirs and the water quality impacts of current reservoir operating policies. It was noted that releases from a reservoir with poorer quality water (i.e., Cannonsville Reservoir) is relied upon heavily to meet stream flow requirements and that higher quality supplies in other reservoirs are primarily for out-of-basin use.

KEY QUESTIONS: WATER QUALITY NEEDS FOR RECREATION

- Are there water quality threats to recreational activities in the basin? If so, where are the threats and what are the sources?
- What water quality is needed to maintain recreational activities?

4.3.2 Water Quality Management Strategies

In addition to expressing concerns about water quality problems and needs, many of those interviewed also expressed opinions regarding water quality management strategies. As noted, several of those interviewed believe that achieving the goal of “fishable and swimmable” throughout the basin should continue to drive water quality management efforts. Notably, many interviewees agree that a new Comprehensive Plan for the basin should address both intra-state and interstate water quality issues. A commonly held view is that most of the current and future threats to water quality in the basin occur in the tributary watersheds away from the main stem of the Delaware River. Several interviewees expressed the opinion that maintenance or improvement of water quality in the main stem of the river will depend upon the success of efforts to protect or improve water quality in the tributaries.

Some of those interviewed believe that source water protection should be the emphasis or driver for water quality management strategies. By protecting the quality of water supplies, particularly public water supplies, it is thought that other instream values will also be protected. It is also thought that strategies focused on the protection of public water supplies will garner greater public support. One interviewee offered an opinion that protection of areas with “pristine” water quality should be emphasized over restoration of degraded streams.

A common view is that the control and abatement of non-point sources of water pollution should be a top priority. Several interviewees cited the great progress that has been made in controlling point-source water pollution and expressed a view that efforts to control point-sources of water pollution (i.e., municipal and industrial wastewater discharges) may have reached a point of diminishing returns. Specifically, it is thought by some, particularly those representing the regulated community, that further improvements in wastewater treatment will come with unacceptably high costs and may not yield significant water quality benefits. A concern is that non-point sources of water pollution, and in some cases atmospheric deposition, are the primary sources of certain types of pollutants (e.g., toxics) and that the emphasis should therefore be placed on controlling those sources. However, some of those interviewed expressed concern about new point-source wastewater discharges in the upper portions of the basin. One individual felt that a “no discharge” policy should be adopted for areas designated as “special protection” waters.

Many of those interviewed support a watershed-based approach, both for the identification of threats to water quality and for the development of strategies to protect or improve water quality. A watershed-based approach to water quality management is seen as a holistic way to address problems and threats and as a way to build support at a grassroots level for implementation strategies to prevent, control, or abate threats to water quality. Importantly, many of those that endorse a watershed-based approach see non-point source pollution control as a priority and identify local land use control and regulation of land development as central to managing water quality. Given the complexity and contentiousness of local land use issues, many interviewees believe that success in addressing threats to water quality requires a collaborative, bottom-up approach that will allow local interests – public and private - to set priorities and make necessary trade-offs.

Several interviewees also expressed interest in market-based approaches to water quality management as an alternative to traditional command and control regulatory approaches. Specifically, it is thought by some of those interviewed that trading of waste load allocations, or pollution credits, should be allowed. For example, a point-source wastewater discharger might be allowed to offset an increase in its permitted discharge by paying for non-point source measures or by paying for the upgrade of another discharger’s treatment facilities.

A number of those interviewed expressed interest in beneficial reuse of reclaimed water (i.e., appropriately treated wastewater), both as a strategy for meeting water demands and as a way to reduce wastewater discharges. Reuse strategies could include direct use of reclaimed water as a substitute for other water supplies, for example, irrigation of golf courses, or indirect reuse through recharge of ground water supplies. These individuals generally agreed that the planning process should identify opportunities for beneficial reuse and that strategies for encouraging or requiring reuse should be considered.

KEY QUESTIONS RE: WATER QUALITY MANAGEMENT STRATEGIES

- Are current water quality standards and regulatory approaches adequate?
- What are the best strategies for prevention and control of non-point sources of water pollution?
- To what extent can or should watershed-based approaches be used to identify and assess water quality problems?
- Should non-degradation policies (i.e., special protection waters) be expanded to other portions of the Delaware River or to other tributaries?
- To what degree can the sources of various toxic contaminants be identified and controlled? Can the available strategies for control of toxic contaminants achieve water quality standards for such contaminants?
- To what extent can or should local land use and development controls be used to prevent or control non-point sources of water pollution?
- Are there areas where the beneficial reuse of reclaimed water will provide water quality benefits? Are there areas where direct discharges of wastewater should be discouraged or prohibited?
- Should regulatory incentives or market-based approaches be developed for the prevention and control of point and non-point sources of water pollution (e.g., trading of pollution credits)?

4.4 Issue: Flood Loss Reduction Needs and Strategies

Flood protection or flood loss reduction was generally not seen as a major issue in the Delaware River Basin. However, when prompted, many of those interviewed felt that a new Comprehensive Plan should address flooding problems and flood loss reduction strategies.

4.4.1 Flooding Problems and Flood Protection Needs

Interviewees expressing interest in flooding issues generally agreed that some effort should be devoted to identifying flood prone areas and on assessing the nature and extent of flooding problems. It was noted by several interviewees that the topography of some areas of the basin is conducive to flash flooding and that low-lying areas in the coastal plain are vulnerable to river flooding and tidal storm surges.

KEY QUESTION RE: FLOOD LOSS REDUCTION NEEDS

- What areas of the Delaware River Basin are most prone to flooding and/or have the greatest potential for loss of life or property?
- Are there dam safety problems in the basin? If yes, are the inspections and repair programs adequate?

Among those offering comments on flood loss reduction strategies, there was general agreement that non-structural approaches are preferred over structural flood control measures. In particular, many of those interviewed appear to strongly favor strategies for prevention of flood losses by prohibiting development in flood prone areas and through more effective on-site management of storm water runoff. Some of those interviewed believe that current federal flood insurance requirements for local flood plain management should be strengthened. Others expressed concerns about the potential for land development outside of flood plains to create or aggravate downstream flooding problems. At issue are the changes in the hydrologic characteristics of watersheds that typically accompany increased impervious land cover. Several of those interviewed suggested that the common practice of building structures to detain and then discharge storm water should be abandoned in favor of innovative strategies for managing storm water on-site. It was noted that in addition to preventing downstream flooding problems, on-site management of storm water could also reduce non-point sources of water pollution and enhance recharge of local ground water supplies.

Non-structural flood loss reduction strategies are also favored in areas that are already subject to flooding problems. Several interviewees commented that greater emphasis and funding should be directed toward land acquisition and removal of structures in flood prone areas. It was noted that public acquisition of land to eliminate flood hazards and restore natural floodways could also provide opportunities for creation of water quality buffer zones adjacent to sensitive streams, for restoration and enhancement of fish and wildlife habitat (e.g., wetlands), and provide recreational benefits. It was suggested that an effort should be made to identify priorities for public land acquisition where such multiple benefits could be realized.

A few of those interviewed indicated that structural flood control measures, such as stream channelization or development of new flood control reservoirs, could be needed in some areas. For example, acquisition of land and removal of existing structures in heavily urbanized areas may not be economically or politically feasible. Importantly, no interviewee suggested that new

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large-scale flood control reservoirs are needed, either on the main stem of the Delaware River or on major tributaries. There were, however, suggestions by sport fishing and recreational boating interests that the operations of existing water supply reservoirs in the upper portions of the basin might be modified to provide flood control benefits. Specifically, it was suggested that reservoir storage might be drawn down during the winter months to provide freeboard for flood storage while also providing greater downstream flows to protect the habitat of the trout fishery. It was thought that such an operating policy might have little or no impact on water supply availability because of the high probability that the reservoirs would refill during the spring. Several of those interviewed also recalled proposals to modify the operations of the F.E. Walter Reservoir to reallocate flood storage capacity to provide water supply storage for stream flow augmentation.

Several individuals took note that an inter-agency initiative is already underway through the recently established DRBC Flood Advisory Committee and that the work of this committee should be incorporated into a new Comprehensive Plan. The primary focus of this committee is to secure federal funding for a basin wide upgrade of flood monitoring, forecasting, and warning capabilities.

KEY QUESTIONS RE: FLOOD LOSS REDUCTION STRATEGIES

- Are existing floodplain development regulations adequate to prevent inappropriate development in or near flood prone areas? If not, how should such regulations be modified?
- Are existing local regulations regarding storm water management adequate to prevent flooding problems from developing or becoming worse (e.g., restrictions on impervious cover, construction of detention basins)? If not, how might they be strengthened?
- To what extent can storm water management strategies be integrated with strategies to prevent or control non-point sources of water pollution (e.g., development of detention and filtration basins)?
- To what extent can storm water management strategies be used to increase ground water recharge?
- To what extent should land and property acquisition/modification be used as a strategy to eliminate flood hazards? Are there opportunities to eliminate or reduce flood losses through land acquisition that will also provide other benefits (e.g., water quality protection, recreation, restoration of fish and wildlife habitat)?
- Are there areas where structural flood control measures are needed and appropriate (e.g., additional flood storage/retention, channelization)?
- Can the operations of existing water supply reservoirs be modified to provide flood control benefits?
- Can the operations of existing flood control reservoirs be modified to increase water supply availability without increasing the risk of flooding?
- Is the existing system for flood forecasting, warnings, and emergency response adequate? If not, what improvements are needed?

4.5 Issue: Waterway Corridor Management

The interviews revealed a number of issues relating to “waterway corridor management” needs and strategies. Issues of concern include development or redevelopment of urban waterfronts, recreational access to the river, establishment and protection of waterway corridors from development, stream restoration, debris removal and control of invasive, non-native species.

KEY QUESTIONS: WATERWAY DEVELOPMENT NEEDS

- Are there areas in the basin where new development or redevelopment of urban waterfronts is needed or should be promoted?
- Are there areas in the basin where additional waterfront recreational facilities (e.g., river access, parks) are needed?
- Are there areas in the basin where existing waterway corridors should be preserved or otherwise protected? Are there areas where restoration of waterway corridors should be a priority?
- Are there areas where waterfront development needs conflict or may be incompatible?
- Is there a need for cooperative planning of waterfront development to avoid potential conflicts?
- To what extent should there be a debris removal program to minimize hazards to recreational boaters and navigation?
- To what extent are invasive, non-native plant and animal species a problem in the Delaware River Basin?

Several of those interviewed expressed interest in urban waterfront development or re-development as an economic development strategy. It was noted that waterfront development is occurring or is being discussed in a number of communities along the river. Benefits are seen in terms of remediation and restoration of old industrial sites, water quality protection, habitat restoration, and development of recreation and tourism. Some interviewees felt that any effort to “reconnect” the public to the river should be encouraged and supported in a new Comprehensive Plan. However, development or redevelopment of urban waterfronts is generally seen as a local issue. Some felt that the issue should be addressed in a new Comprehensive Plan to the extent that coordinated waterfront development planning is needed to avoid competition and conflict among communities.

A significant number of those interviewed voiced concerns about recreational access to the Delaware River and to Delaware Bay. Among those expressing concerns, it was generally agreed that access to the lower portions of the river and bay is inadequate and that river access needs should be addressed in a new Comprehensive Plan. However, recreational access is not regarded as a problem in the upper portions of the basin. While most of those that voiced opinions on recreational access support development of new facilities, some have concerns about the potential

for overuse of recreational resources and the potential for conflict arising from incompatible recreational activities. For example, large numbers of tubers and boaters may create congestion, safety problems, and litter problems and diminish the overall quality of some recreational activities. Conflicts may also develop between incompatible recreational uses. For example, one interviewee cited potential conflicts between users of personal watercraft (e.g., jet skis) and other recreational users, such as birders, in natural areas. Some interviewees believe issues of recreational access should be addressed in a coordinated fashion, perhaps as part of the Comprehensive Plan development process.

Several interviewees also expressed interest in the preservation and restoration of waterway corridors. Waterway corridors are recognized as providing multiple benefits including water quality protection, flood control, fish and wildlife habitat, and recreational opportunities. Some interviewees believe that the planning process should include an assessment of waterway corridors throughout the basin to identify priorities and strategies for their management, preservation, and restoration.

One interviewee voiced concerns about problems with non-native invasive plant and animal species. Specifically, it was noted that plants like purple loosestrife have infested large areas along the Delaware River and major tributaries and have contributed to the overall degradation of riverine ecosystems. It was suggested that the problem and potential strategies for managing the problem could be investigated in the planning process.

KEY QUESTIONS: WATERWAY CORRIDOR MANAGEMENT STRATEGIES

- Should there be a coordinated, basin-wide effort to assess economic and recreational development needs and strategies for waterway corridors?
- How can efforts to redevelop urban waterfronts be designed to provide multiple benefits (public access, riparian buffers, habitat restoration)?
- How can potential recreational conflicts be avoided or minimized?
- Are there waterway corridors in the basin that should be preserved or otherwise protected from development? Are there waterway corridors that should be priorities for restoration?
- How can efforts to eliminate or reduce flood losses be designed to protect waterway corridors, improve recreational access, and restore fish and wildlife habitat?
- What can be done to eliminate or manage invasive non-native plant or animal species?

4.6 Issue: Public Awareness of Water Resources Problems and Needs

The lack of public awareness of water resource problems and needs was identified as an issue by several of those interviewed. Some interviewees felt that there should be an effort to define and promote a common or shared vision of how the water resources of the Delaware River Basin should be managed. These individuals generally felt that more attention and resources should be given to educating both school-age children and adults about the hydrologic and environmental characteristics of the Delaware River Basin. One individual suggested that a water resources curriculum specific to the Delaware River Basin is needed along with supplemental materials on local watersheds.

It was also suggested that a coordinated interstate marketing effort should be developed to promote the Delaware River Basin as a recreation and tourism destination. The goal would be to develop greater regional, national, and even international recognition of the many recreation and tourism opportunities in the basin.

4.7 Issue: Institutional Arrangements for Water Resources Management

One of the standard questions asked during the interviews was whether institutional issues should be addressed in the development of a new Comprehensive Plan. Almost without exception, there was agreement that institutional issues not only should be addressed in the Comprehensive Plan but that such issues “must” be addressed. Most of those interviewed expressed the view that for the Comprehensive Plan to be meaningful, it should address key implementation issues, such as intergovernmental roles and funding for program and project implementation.

4.7.1 Intergovernmental Roles and Responsibilities

Water resources management within the Delaware River Basin occurs within a highly fragmented institutional environment. Most of the programmatic functions and issues identified in the Delaware River Basin Compact and discussed in this paper are responsibilities shared by various local, state, interstate, and federal governmental agencies. In some cases, the private sector also plays a major role; for example, in public water supply, water pollution control, and provision of water-related recreational facilities. The Delaware River Basin Compact recognizes the need for close intergovernmental coordination among the four basin states and the federal government and

the need to promote “...interstate comity” and “...remove causes of present and future conflict” and “...provide for cooperative planning.”

There is general agreement among those interviewed that a new Comprehensive Plan for the Delaware Basin should recognize and build upon current institutional relationships among interstate, federal, state, and local entities, as well as the private sector and non-governmental organizations. As a starting point, it was suggested by one individual that a “map” or matrix showing current institutional arrangements for water resources management would be helpful.

There is also agreement that current intergovernmental roles and responsibilities should not be taken as a given. Rather, through the planning process, roles and responsibilities should be subject to review and possible re-definition or adjustment. For example, many of those interviewed, particularly those representing the regulated community stakeholder group, expressed concerns about potential overlap and duplication of effort between the states and the DRBC in the area of water quality standards and regulation. Others expressed concerns about potential gaps in the institutional framework. For example, there are significant variations in the scope and coverage of water quantity regulatory programs among the four states. Many of those interviewed also cited inconsistencies among the basin states in a number of programmatic areas including water quality standards, triggers for state drought declarations, fish consumption advisories, and floodplain management regulations. Some of those interviewed also noted that the implementation of management strategies in many cases will require inter-governmental and public-private partnerships to pool limited staff and funding resources.

Many of those also interviewed offered opinions about the DRBC’s responsibilities. Among those expressing opinions, there was widespread agreement that the DRBC continues to play a vital role in promoting coordination and consistency among the water resources management programs of the states and the federal government. Many voiced support for the DRBC acting as a “convener” of interests and a “facilitator” of planning and decision-making processes to address needs and problems within the basin. Many also viewed the DRBC as an important repository of data, information, and technical expertise and thought that the DRBC should play a major role in ensuring that “good science” is employed in decision-making. There were many who felt that the DRBC should help develop and actively promote a new vision of basin-wide water resources management and, in the process, work to establish a broad coalition of stakeholders for the implementation of new strategies.

There was, however, considerable divergence of opinion as to the DRBC's role and responsibilities. As indicated previously, some of those interviewed, particularly those representing the environmental stakeholder group, see a need for DRBC to expand its sphere of influence to intrastate issues, such as water quality and flow management in major tributaries. Some of these individuals view the DRBC as an important "backstop," filling in where there are gaps in state or federal management capabilities; for example, ground water withdrawal permitting in Pennsylvania. A number of those interviewed also felt that the DRBC should promote and support a more localized watershed-based approach to water quantity and quality issues. For some, the DRBC should become a more active player in local water resources management issues.

Others are opposed to any expansion of DRBC's role and responsibilities beyond the agency's traditional focus on water quantity (water supply and flow management) and water quality issues. Many of those interviewed that hold this view represent the governmental or the regulated community stakeholder groups. Some of these individuals expressed concerns that the DRBC was "straying" into intrastate and local issues. Some also expressed the opinion that the DRBC's role in water quality was duplicative of state and federal programs. Those expressing this opinion also generally felt that the DRBC should place less emphasis on water quality issues and narrow its focus to water supply and flow management issues. Often, these individuals expressed a view that the DRBC should focus primarily on the development of additional reservoir storage to meet future water needs.

A significant number of those interviewed also identified intrastate versus interstate issues as a concern. Some individuals, particularly those representing environmental organizations, felt that the DRBC should become more involved in water resources management issues on major intrastate tributaries of the Delaware River. Most of those expressing this view were concerned that deteriorating water quality in tributary streams would eventually lead to water quality problems in the mainstem of the Delaware River. For example, it was suggested that the DRBC could establish water quality standards for each major tributary at its confluence with the Delaware River and require the individual states and local governments to ensure compliance with the standards. Other individuals representing state agencies and the regulated community were opposed to DRBC extending its water quality regulatory programs to intrastate tributaries.

Individuals representing water-related recreation and tourism interests were also concerned about the adequacy and the timing of stream flows and the operation of reservoirs in the upper portions of the basin and on major tributaries. Some felt that the DRBC's policies relating to flow management should address sport fishing and recreation needs during non-drought periods. Aside from meeting interstate flow requirements, others see the fisheries issues in the upper portions of the basin as a strictly intrastate issue.

4.7.2 Management of Land Use and Development

Population growth, land use, and development issues are viewed by many of those interviewed as primary "drivers" of water resources needs and problems. As noted elsewhere in this paper, land use and development issues are directly linked to various water resources related issues, including particularly water supply, water quality, and flooding issues. Nearly all of those interviewed expressed concerns and opinions about these issues and many indicated that these issues should be addressed in a new Comprehensive Plan. Individuals representing the environmental stakeholder group were particularly inclined toward this view. Also, land use and land development issues were particularly prominent in the interviews with individuals from Pennsylvania. However, some interviewees, particularly those representing the regulated community, are opposed to getting involved in what are seen as inherently local issues. Many interviewees tacitly acknowledge the potential for conflict and controversy surrounding "growth management" issues and voiced concerns about whether and how a new Comprehensive Plan could affect local land use decisions.

Several interviewees suggested that a goal of a new Comprehensive Plan should be avoidance or prevention of future water problems. Greater integration of water resources issues into land use planning and regulation development is seen as a key strategy for achieving this goal. One individual noted that there are two primary considerations relating to land use that must be addressed if water problems are to be prevented or at least minimized. One consideration relates to "where" development is allowed to occur. Directing growth and development away from areas deemed unsuitable, is seen as a strategy for avoiding adverse impacts on water and other natural resources. Another consideration is "how" development occurs. Proper planning and design is seen as a way to minimize or mitigate unavoidable impacts.

There are a number of questions and issues that arose in the interviews that pertain to the institutional setting for land use planning and management. Many expressed concerns about the fragmentation of land use planning and land development regulation at the local level.

Supporters of a watershed-based approach to water resource management were particularly concerned about how to ensure coordination and cooperation among multiple local jurisdictions within a single watershed. It was generally agreed that all of the local jurisdictions within a watershed should coordinate their land use planning and adopt consistent land development regulations and standards. Another concern is that there often may be a “disconnect” between land use planning and local decisions about where and how development occurs. Some felt that the legal authority of local governments to force compliance with land use plans is inadequate. This was often cited as an issue in Pennsylvania.

Some of those interviewed also expressed concerns about the degree to which local decision-makers understand the relationship between land use management and water resources management. Some felt that an effort should be made to inform and assist local decision-makers. However, frequent turn-over among local elected officials is seen as a problem both in terms of potential policy shifts and in terms of the knowledge levels of local decision-makers.

KEY QUESTIONS: MANAGEMENT OF LAND USE AND DEVELOPMENT

- How can land use and future land development be managed to avoid or minimize undesirable impacts on water and other natural resources?
- What areas are best suited for future development from a water resources perspective?
- What areas are not well-suited for future development from a water resources perspective?
- What institutional changes are needed to provide for more effective integration of water resources management considerations into land use planning and the regulation of land development?
- What role, if any, should state, federal, and interstate agencies play in land use planning and management?

4.7.3 Funding for Implementation of Management Strategies

The availability of funding for the implementation of water resource management programs and projects is another cross-cutting issue that affects all of the issue areas identified in this paper. Many of those interviewed expressed concerns about the adequacy of funding for various water resources management functions and there was general agreement that a new Comprehensive

DRAFT

Plan for the Delaware River Basin should address funding issues. To the extent that the Comprehensive Plan sets basin wide goals and priorities, there is general agreement that the Plan should serve to guide funding for water resource management programs and projects.

In the interviews, particular concerns were cited by individuals from each of the stakeholder groups with regard to the withdrawal of direct federal funding support for the DRBC. Generally, these were individuals that are directly involved with the DRBC and who are familiar with the issue. For these individuals, the withdrawal of federal funding is seen as a sign of weakened political support for the agency and, more broadly, for basin wide water resources management. Some of those interviewed felt that the Comprehensive Plan development process could provide a vehicle for re-defining the broader federal interest in the basin and could help re-establish political support for reinstatement of direct federal funding for the DRBC.

Concerns were also expressed with regard to the question of who should pay for the development of additional reservoir storage capacity in the basin. Several of those interviewed cited past attempts to modify the F.E. Walter Reservoir to increase storage for flow augmentation as an illustration of the importance of this issue. Many of these individuals expressed the opinion that the project failed to move forward primarily because of opposition from “entitlement” water users in the lower basin that did not see the project as a benefit to them and therefore were unwilling to contribute funding to the project. Most of the individuals with an interest in this issue expressed the hope that the Comprehensive Plan development process would help to better define the need for and benefits of additional reservoir storage and could therefore help build support for funding.

KEY QUESTIONS: ADEQUACY OF FUNDING

- What are the relative costs of the various water resource management strategies?
- Who should pay the costs of implementation of recommended strategies and how should such efforts be funded?
- Is there sufficient federal interest in the Delaware Basin and in the functions of the DRBC to warrant reinstatement of federal funding support for DRBC?

4.7.4 Data and Information Management

Individuals interviewed from each of the four stakeholder groups identified information management as an important issue that should be addressed in a new Comprehensive Plan. There was broad agreement that “good” data and “sound science” is needed to ensure that problems and needs are recognized and understood and to ensure that “appropriate” strategies are developed to address problems and needs. A fairly common comment was that data and knowledge “gaps” should be identified as part of the planning process and the Comprehensive Plan should include strategies (e.g., improved data collection, special studies, etc.) to fill the gaps. Many of those interviewed recognized that progress toward solving a particular problem might first require investments in additional data collection and scientific analyses. For example, several of those interviewed noted that insufficient information about the flow needs of different types of aquatic habitat is an impediment to decision-making about how to “better” manage flows. General concerns were also voiced by several individuals with regard to the adequacy of data and information on ground water supplies. Several individuals indicated that ground water information is inadequate in many areas of the basin and that the lack of information is an impediment to proper management of the resource.

Those representing the regulated community often cited particular concerns about the adequacy of data and scientific knowledge. Specifically, concerns were voiced with regard to the adequacy of data and analytical tools (e.g., models) and our current scientific understanding of the impacts of various toxic water pollutants. Some felt that the entire approach to standards setting for certain toxic water pollutants is fundamentally flawed because of data limitations and could result in standards that would be unattainable. Some individuals from both the regulated community and the recreation and tourism stakeholder groups also voiced concerns about the adequacy of data and science with regard to the flow needs of instream fisheries habitat, particularly in the upper portions of the Delaware River Basin. Several individuals also expressed concerns about the adequacy of data for water supply planning (e.g., data on supply availability, demands, etc.).

KEY QUESTIONS: DATA COLLECTION AND INFORMATION MANAGEMENT

Data Collection and Management

- Are existing water-related monitoring programs and information management systems providing the right information for sound planning and decision-making?
- Is there a sound scientific basis for current flow management policies for the Delaware River and major tributaries?
- What additional data and analyses are required to establish the flow needs of both freshwater and estuarine fisheries?
- Is there adequate information and knowledge regarding the sources, persistence, and health and environment effects of certain toxic water pollutants?
- Is there adequate information about the availability and sustainability of ground water supplies? About the interaction between ground and surface water supplies?
- Are available data and information regarding the existence and location of flood hazards adequate (e.g., floodplain mapping)?
- Are existing water-related monitoring and data collection programs adequate? Are there needs for modernization and automation of monitoring and data collection systems? Are such systems providing data and information that is relevant and useful in water resources management?
- Are current water-related monitoring and data collection programs adequately coordinated to ensure optimal use of available resources and to prevent unnecessary duplication of effort?
- Are the various agencies involved in monitoring and data collection using consistent methods for data acquisition and documentation?
- Are there gaps in our data or understanding of water resources problems and needs that are an impediment to developing or implementing strategies to address particular problems or needs (e.g., assessments of instream flow needs, water supply and demand data)?
- Are there problems with data accessibility and dissemination? If so, how can such problems be overcome?

Information Management

- How can GIS data on the various state and federal clearinghouses be leveraged to address Basin concerns?
- Using the Internet tools that have become available, what GIS data should be presented using interactive mapping?
- How can special program issues, such as oil spill restoration and mitigation, etc. be addressed?
- Can DRBC take advantage of efforts already underway such as National Spatial Data Infrastructure, the Geospatial Clearinghouse, and other state and federal initiatives?
- How can data be organized internally and with the various DRBC advisory committees? Do the committees need standards for database management and GIS data development such that their data can easily be served over the Internet?
- How can a more sophisticated web presence be developed?

5.0 SUMMARY OF FINDINGS

The stakeholder interview process revealed a diversity of opinions and concerns about a host of water resource needs and problems and potential strategies for addressing them. At this early stage of the planning process, it is not possible to clearly identify areas of agreement and disagreement on many of the substantive issues. Many stakeholders urged that a particular issue be addressed or a particular strategy adopted, without expressing opposition to other concerns or strategies (e.g., conservation, reuse). It can be expected that consensus and differences of opinion on substantive issues will begin to emerge once needs, problems, and potential strategies come into greater focus through the planning process.

With respect to development of the basin wide Comprehensive Plan, however, some areas of agreement and differences of opinion are apparent. These are highlighted below:

Areas of Agreement

There is broad agreement among the stakeholders that a new Comprehensive Plan for the Delaware River Basin is needed and that it should provide a framework to guide water resources management within the basin. There is also general agreement that a new Comprehensive Plan should be forward-looking, that it should be based on an objective assessment of current and future conditions, that it should define goals and objectives and recommend strategies to address problems and needs, and that it should include indicators by which to gauge progress toward the achievement of goals. Most stakeholders also agree that the “core issues” of water quantity and water quality should be given particular attention in the planning process. There is also general agreement that a new Comprehensive Plan should address institutional issues including, particularly, intergovernmental roles and responsibilities for water resources management. Overall, there is agreement that the planning process should be collaborative and should provide opportunities for all stakeholder interests and views to be expressed and considered.

Areas of Differing Opinion

At this stage, the areas where opinions appear to diverge revolve around two questions: 1) should the planning process and a new Comprehensive Plan be “expansive” or “focused”; and 2) what are the appropriate roles and responsibilities of the Delaware River Basin Commission? For many stakeholders, these questions are interrelated.

There are differences of opinion on the question of whether the planning process should be expansive or whether it should be focused on a small number of core issues. One group of stakeholders believes the planning process, and a new Comprehensive Plan, should focus on the core issues of water quantity and water quality. Many of these stakeholders urged that the limited amount of time and the limited budget available to support the planning process are reasons to focus on a few core issues. Others voiced concerns about the DRBC “straying” into issues where it has not traditionally played a role. The latter groups of stakeholders generally believe that the planning process should only address issues that are within the DRBC’s traditional sphere of activity. Some believe that the planning process should be narrowly focused only on basin-wide water supply and flow management issues.

Another group of stakeholders has a very different view of the planning process, the Comprehensive Plan, and the role of the DRBC. This group believes the planning process should address all water resources-related issues and concerns in a holistic or integrated manner. Many in this group are concerned that important interrelationships among issues may be overlooked if the scope of the planning process is narrowed to a handful of issues. Most of the stakeholders that fall into this group also subscribe to a view that the Comprehensive Plan should be more than a strategic plan for the Delaware River Basin Commission. Rather, for these stakeholders, the plan should address all issues of concern, even those that fall outside of the DRBC’s traditional sphere of activity. Accordingly, a new Comprehensive Plan would include recommended implementation activities that are the primary responsibility of other agencies and it might also include recommendations that require an expanded role for the DRBC.

DRAFT

APPENDIX A

INDIVIDUALS INTERVIEWED FOR INPUT ON THE DEVELOPMENT OF A NEW COMPREHENSIVE PLAN FOR THE DELAWARE RIVER BASIN

Delaware River Basin Commission Alternates and Advisors

Name	Organizational Affiliation
<i>Lt. Col. Gregory Bean</i> Robert Johnson Paul Gaudini	U.S. Army Corps of Engineers
<i>Irene Brooks</i> William Gast	Pennsylvania Department of Environmental Protection
<i>Kevin Donnelly</i> Harry Otto	Delaware Department of Natural Resources and Environmental Control
<i>Warren Lavery</i>	New York Department of Environmental Conservation
<i>Bob Tudor</i> Joe Miri	New Jersey Department of Environmental Protection

Note: DRBC Commission alternates shown in *italics*.

Delaware River Basin Commission Staff

Name	Title/Function
Tom Brand	Project Review Branch
Pamela Bush	Commission Secretary/Assistant General Counsel
Carol Collier	Executive Director
Jeff Featherstone	Deputy Executive Director
Tom Fikslin	Modeling and Monitoring Branch (liaison to Toxics Advisory Committee)
Rick Fromuth	Operations Branch (liaison to Flood Advisory Committee)
Richard Gore	Chief Administrative Officer
Warren Huff	Information Services Branch (liaison to Information Management Advisory Committee)
Forsyth Kineon	Planning and Implementation Branch (Delaware Estuary Coordinator)
Dave Pollison	Planning and Implementation Branch (liaison to Water Quality Advisory Committee)
Ed Santoro	Modeling and Monitoring Branch (liaison to Monitoring Advisory Committee)
Esther Siskind	Planning and Implementation Branch (liaison to Watershed Advisory Council and Water Management Advisory Committee)
Dick Tortoriello	Operations Branch (liaison to Flow Management Technical Advisory Committee)

DRAFT

DRBC Watershed Advisory Council Members and Others

Name	Organizational Affiliation	Primary Stakeholder Group Affiliation
<i>Robert Baker</i>	Baker Farms	Regulated Community
<i>Robert Barkanic</i>	Pennsylvania Department of Environmental Protection	Governmental Agency
<i>Bill Sharp</i>	National Park Service	Governmental Agency
<i>Dorothy Bowers</i> (plus six other Merck employees)	Merck & Company	Regulated Community
<i>Jan Bowers</i>	Chester County Water Resources Authority	Governmental Agency
<i>John Coscia</i> <i>Barry Seymore</i> <i>Mike Ontko</i>	Delaware Valley Regional Planning Commission	Governmental Agency
<i>William Douglass</i> <i>David Soete</i>	Upper Delaware Council	Governmental Agency
<i>Sally Dudley</i>	Association of New Jersey Environmental Commissions	Environmental
<i>Gerard Esposito</i>	Tidewater Utilities	Regulated Community
<i>Eric Evenson</i> <i>Steve Nieswand</i>	U.S. Geological Survey	Governmental Agency
<i>Rebecca Hamner</i> <i>Mario Delvarcario</i>	U.S. Environmental Protection Agency – Regions 2 and 3	Governmental Agency
<i>Mathilda Harrison</i>	Pocono Mountains Vacation Bureau	Recreation and Tourism
<i>Ray Heinzelmann</i>	Delaware River Port Authority	Governmental Agency
<i>Ruth Jones</i> <i>Dave Jones</i>	Kittatinny Canoes	Recreation and Tourism
<i>Tom Kerr</i> <i>Chris Kocher</i>	Wildlands Conservancy	Environmental
<i>Bruce Kilby</i>	Aventis Pasteur	Regulated Community
<i>Dan Lejeune</i>	Lejeune Properties	Regulated Community
<i>Suzanne McCarthy</i>	Academy of Natural Sciences	Environmental
<i>Kyle Babbitt Myers</i>	Cornell Cooperative Extension	Governmental Agency
<i>Howard Neukrug</i> <i>Dennis Blair</i>	Philadelphia Water Department	Regulated Community
<i>Mary Ellen Noble</i>	Delaware Riverkeeper Network	Environmental
<i>Virginia North</i>	Delaware Nature Society	Environmental
<i>Bill Palmer</i>	Water Resources Association of the Delaware River Basin	Regulated Community
<i>Joe Piotrowski</i> <i>Larry Merrill</i>	U.S. Environmental Protection Agency, Region 3	Governmental Agency

DRAFT

<i>Michael Principe</i> <i>Lorraine Jannus</i>	New York City Department of Environmental Protection	Regulated Community
<i>Richard Riegler</i>	Philadelphia Suburban Company	Regulated Community
<i>Jonathan Rinde</i>	Partnership for the Delaware Estuary	Environmental
<i>Jim Serio</i>	Delaware River Foundation	Recreation and Tourism
<i>David Shelton</i> <i>Maria Angelo</i> <i>Bernie Reilly</i>	DuPont Company	Regulated Community
<i>Mr. James Shissias</i>	Public Service Electric and Gas Company	Regulated Community
<i>Robert Soldwedel</i>	New Jersey Fish and Wildlife	Governmental Agency
<i>Randy Solomon</i>	New Jersey Future	Environmental
<i>Bernard Sweeney</i>	Stroud Water Research Center	Environmental
<i>Craig Todd</i>	Monroe County Conservation District	Governmental Agency

Note: Watershed Advisory Council members shown in *italics*.

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APPENDIX B

INTERVIEW PROTOCOL²

INTRODUCTION

The governors of the four Delaware River Basin states (Delaware, New Jersey, New York, and Pennsylvania) have directed the Delaware River Basin Commission "...to develop a new comprehensive water resources plan for the Basin, periodically compile an environmental goals and indicators report, and establish a watershed advisory council." In 1999, the Commission adopted a resolution creating the Watershed Advisory Council and outlined its mission and organization as follows:

1. *The primary purpose of the Council is to advise the Commissioners on the development of the basinwide comprehensive water resources plan.*
2. *The Council will advise on goal setting and establishing indicators to monitor progress.*
3. *The Council will advise in the development of watershed management policies.*
4. *The Council will recommend goals for watershed education and provide suggestions on potential implementing organizations.*
5. *The Council will recommend a program to create a basin identity to increase interest in the river basin as a tourist destination and to enhance environmentally sound economic development. The Council will provide suggestions on potential implementing organizations.*
6. *The Council will forward its recommendations to the Commissioners through the Executive Director.*
7. *The Council will have 25-30 members with technical, economic development, academic, and environmental interests, selected from numerous sectors.*

The Commission is committed to developing a process that is open, inclusive and which is consensus-based. To that end, the initial step in the planning process is to develop a conveying paper with the objective of identifying key issues and stakeholders and designing a work plan for proceeding with the development of a new Comprehensive Plan. At the outset, the Commission wants to ensure that the right issues are addressed and that the views of all key stakeholder groups are represented.

I have been retained by the Commission to assist with this process. My immediate task is to complete interviews with each member of the Watershed Advisory Council and prepare a

² This interview protocol was modeled on a protocol developed by the Consensus Building Institute for a conflict assessment entitled, *The Prospects for Building Consensus on New Regulations Pursuant to Delaware's Coastal Zone Act, February 15, 1996.*

DRAFT

convening paper for review by the Council and the Commission. The intent is to ensure that the issues of concern to each stakeholder group are identified and that the perspectives of each stakeholder group are recognized.

I would appreciate approximately one hour of your time. Please note that your answers to my questions are confidential. This means I will not attribute specific comments or findings to anyone by name or position. Rather, the convening paper will summarize and synthesize the information and opinions gathered through the interview process. A draft of this report will be provided to each member of the Watershed Advisory Council prior to its next meeting, at which time the report will be discussed.

Do you have any questions before we begin the interview?

BACKGROUND

1. What is your current position? How long have you been in this role?
2. Please describe your involvement with water resources and related issues in the Delaware River Basin.
3. Have you worked for other organizations involved with water resources or related issues in the basin? If so, which ones and for how long?

WHAT SHOULD A NEW COMPREHENSIVE PLAN BE?

1. What are your views with regard to what a new Comprehensive Plan for the Delaware River Basin should be? (will likely require some coaching and discussion of the Compact and the current Comp Plan)
2. Do you think the Comprehensive Plan should address all of the issue areas described in the Delaware River Basin Compact (e.g., water supply, water quality, flood protection, fish and wildlife, recreation, and hydropower) or should it be focused on a handful of key issues?
3. Do you think the Comprehensive Plan should address institutional issues, such as the roles of various levels of government and various governmental agencies in water resources management?

THE ISSUES

1. From your perspective, what are the most important water resources-related issues that should be addressed in a new Comprehensive Plan?
2. Of the issues you've mentioned, which issue is of greatest concern to you and why? (try to identify respondent's priority issues).
3. For each of the issue areas you're most interested in, please tell me what you think the problems, needs, or challenges are and why?

DRAFT

4. For each of the issue areas you're most interested in, please tell me what you think should be done to address the problems, needs, and challenges?

THE STAKEHOLDERS

1. For the issues you are most interested in, what groups do you think must be involved in discussions about the new Comprehensive Plan?
2. Have any groups been excluded in the past? If so, do you know why?
3. In your opinion, does the current composition of the Watershed Advisory Council include adequate representation of all of the key stakeholder groups? If not, which stakeholder group is not represented and can you suggest someone that might represent that group?

THE PROCESS

1. In your view, what are the obstacles to a consensus-based process for developing a new Comprehensive Plan? How should these obstacles be addressed?
2. Is your organization willing to work collaboratively with other parties in a consensus-building effort?
3. What do you see as the role of the Watershed Advisory Council? What do you see as the role of the existing DRBC advisory committees?
4. Are there specific data-gathering or fact-finding tasks that need to be done at the outset of the planning process? If so, what are they?
5. What kind of ground rules might you suggest for the Watershed Advisory Council?
6. If you were to design an agenda for the first few meetings of the Watershed Advisory Council, which issues would you take up first?